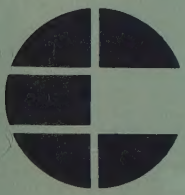
SOL SERIES

Switch Mode Power Units

Power Supply Handbook



Coutant Electronics Ltd.

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INTRODUCTION

1:1. SOL are one of a series of switching power supplies manufactured by Coutant.

1:2. SOL series may be easily changed to operate from a variety of input voltages.

1:3. Any type of load may be powered by SOL series, any number of units may be worked in series or parallel, provided the output is not raised more than 500v D.C. with respect to earth.

1:4. The SOL series have provision for remote sequencing at TTL levels, and for remote resistance programming.

1:5. The control circuitry utilises integrated circuits for reliability, and fully tested "plug-in" circuit boards are available as spare parts to minimise down times.

SPECIFICATION

1. **INPUT**
   102v to 130v A.C.
   198v to 256v A.C. } 45 to 65 Hz.

2. **LOAD REGULATION**
   .05% + 5mV for 0 – Full Load.

3. **LINE REGULATION**
   .05% + 5mV for ± 10% Mains Change.

4. **RIPPLE AND NOISE**
   Less than 2mV RMS and 10mV Pk. to Pk.
   Less than 20mV Pk. Spike (30M Hz Bandwidth)

5. **OUTPUT IMPEDANCE**
   Less than 100 milliohms (D.C. to 100K Hz)
   Less than 200 milliohms (Up to 500K Hz)

6. **OUTPUT VOLTAGE ADJUSTMENT**
   At least ± 5% of nominal by front panel potentiometer

7. **OUTPUT RESOLUTION**
   Less than 30mV.

8. **TEMPERATURE COEFFICIENT**
   ± 0.03%/^{o}C after allowing 10 minute warm up.

9. **R.F.I.**
   Conforms to IEC 22E and B.S.800. part 3.

10. **OVERVOLTAGE PROTECTION**
    Operates at approximately 125% output.
    Response time, O/P drive shut down in less than 30 micro-sec.
    O/P voltage clamped to less than 130% in less than 1 micro-sec.

11. **OVERCURRENT PROTECTION**
    Constant current type
    Current limit set to 110% – 140% of rated current.

12. **REVERSE POLARITY PROTECTION**
    By diode across output.

13. **REMOTE SENSING**
    Unit will compensate for 0.5v line drop in leads.

14. **REMOTE PROGRAMMING**
    Output voltage may be remotely programmed over specified range by external resistor of 1000Ω/v.

15. **INHIBIT**

Output may be inhibited by applying TTL high to inhibit pin, with respect to –S.

16. **PARALLEL OPERATION**

By adjusting O/P voltage to allow units to share load, two or more supplies may be operated in parallel.

Where parallel redundant operation is required on supplies fitted with overvoltage protection, connection. See diagram No. 1 for connections.

17. **THERMAL PROTECTION**

Temperature sensor closes down supply when heat sink exceeds 110°C.

18. **EFFICIENCY**

Greater than 70%.

19. **ISOLATION**

30 megohms between AC input and grounded output terminals at 2.1Kv.
30 megohms between output and ground at 500v D.C.

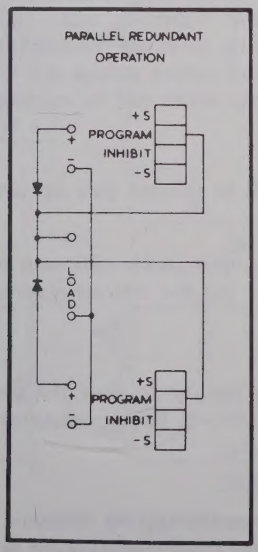
20. **AMBIENT TEMPERATURE RANGE**

Operating –10°C to +70°C (Derating above 50°C)
Storage –40°C to +85°C.

21. **INPUT CURRENT**

On initial switch on, mains inrush current is limited to 16 amps peak at 240 volts.

Diagram No. 1



INSTALLATION INSTRUCTIONS

1. **BEFORE INSTALLING THE POWER SUPPLY**
   a. Check for visible damage
   b. Check that the primary voltage taps on power board P.C.B. are set correctly.

2. **COOLING**
   The power supply is convection cooled and should be mounted with the heatsinks vertical. Adequate provision should be made for airflow through the unit, particular regard should be paid to providing ventilation holes in any chassis on which the supply is mounted.

3. **MAINS CONNECTION**
   Mains connections should be made to the separate connector block. Connect live to L and neutral to N, never connect the mains to any of the output rails.

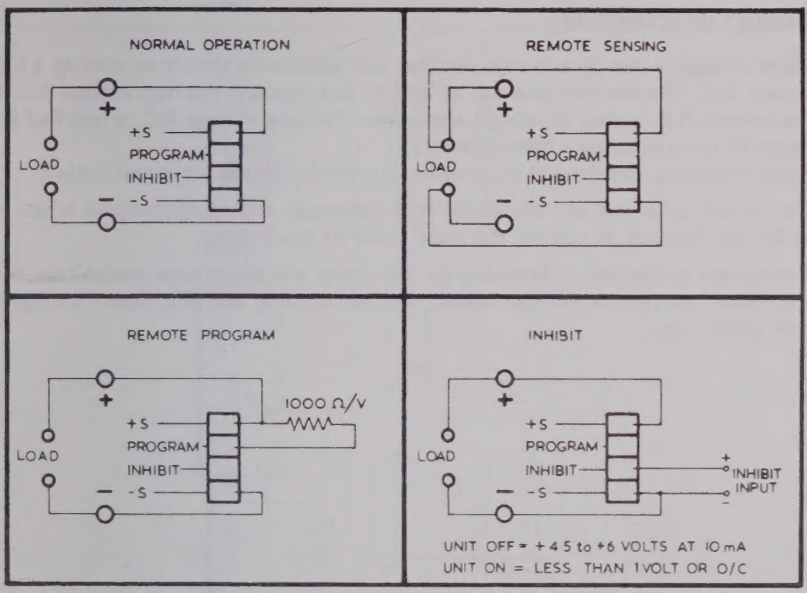
4. **REMOTE PROGRAMMING**
   The procedure for using this facility on this unit is as follows:–
   Remove top cover of unit and unplug the control board (with output voltage adjust potentiometer).
   Remove link next to the potentiometer and re-fit board. Programming can then be achieved by an external resistor connected between + sense and programming terminals at 1000 ohms/V, see diagram on Page 5.
   Note: Do not link + sense and programming terminals for normal operation.

5. **REMOTE SENSING**
   When the output drop across output leads causes embarassment, the links connecting + output and + sensing, and – output and – sensing, can be removed and the sensing terminals connected directly to the load with separate leads; the correct output voltage will then be regulated at the load. The maximum line drop which can be compensated for by the sensing is 0.25 volt per line.

   NOTE
   1. Route the sensing leads to prevent pick up which may appear as ripple on the output of the unit.
   2. Never disconnect the output power rails with the sensing still connected to the load. This may burn out the internal resistors connected between power and sensing terminals.

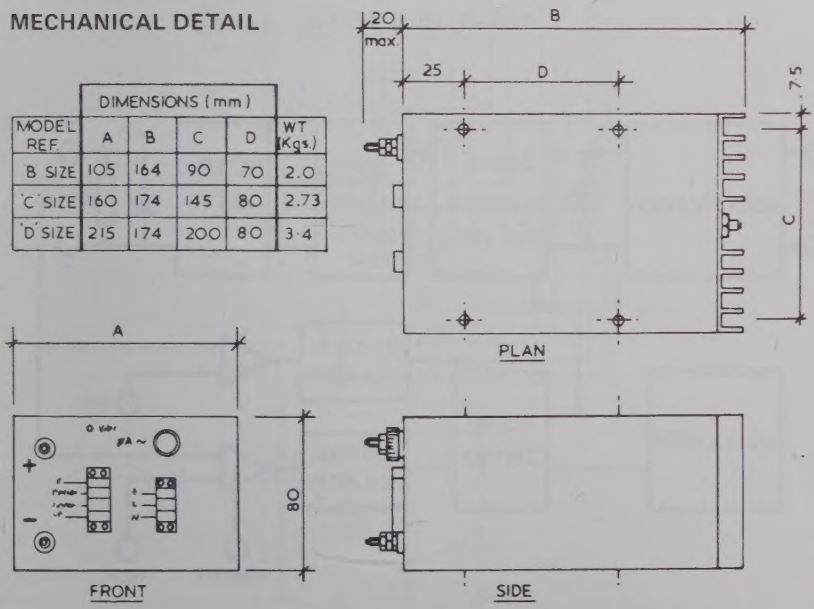
6. **INHIBIT**
   The inhibit provides a facility to shut the power supply off with a TTL signal between Inhibit and –S. (Input resistance 470 ohms inhibit level high 3-8 volt low less than 1.5v).

7. **INPUT VOLTAGE**
   The input voltage may be changed by removing the top cover, and changing the links on the top of the small Printed board as indicated.



MECHANICAL DETAIL

MODEL REF.	DIMENSIONS (mm) A	B	C	D	WT (Kgs.)
'B' SIZE	105	164	90	70	2.0
'C' SIZE	160	174	145	80	2.73
'D' SIZE	215	174	200	80	3·4



FIXINGS ARE M3 x 10 mm DEEP ON ALL MODELS
ALL DIMENSIONS IN MILLIMETERS

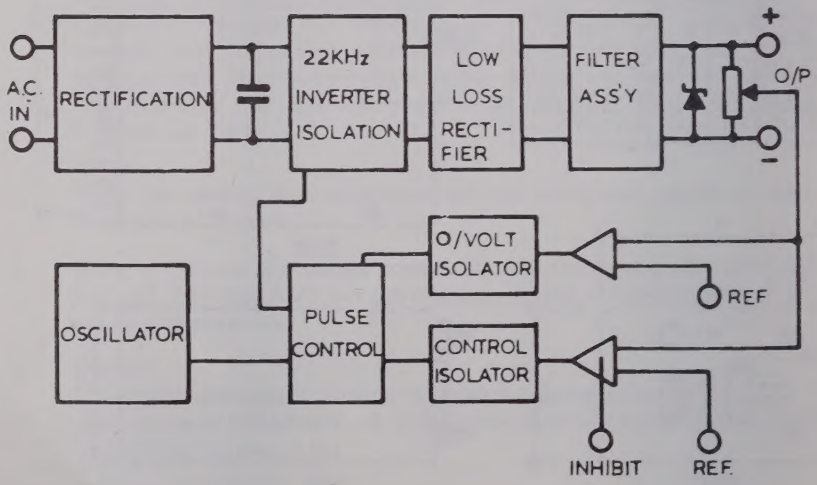
CIRCUIT DESCRIPTION

Mains voltage is fed to a bridge rectifier and smoothing circuit to provide a high voltage D.C. The inverter operates at 22KHz and converts the high voltage D.C. to low voltage A.C. via an isolating transformer. The low voltage A.C. is rectified and passed to the output via a filter assembly.
Radio frequency interferance suppression is provided on the input and output.

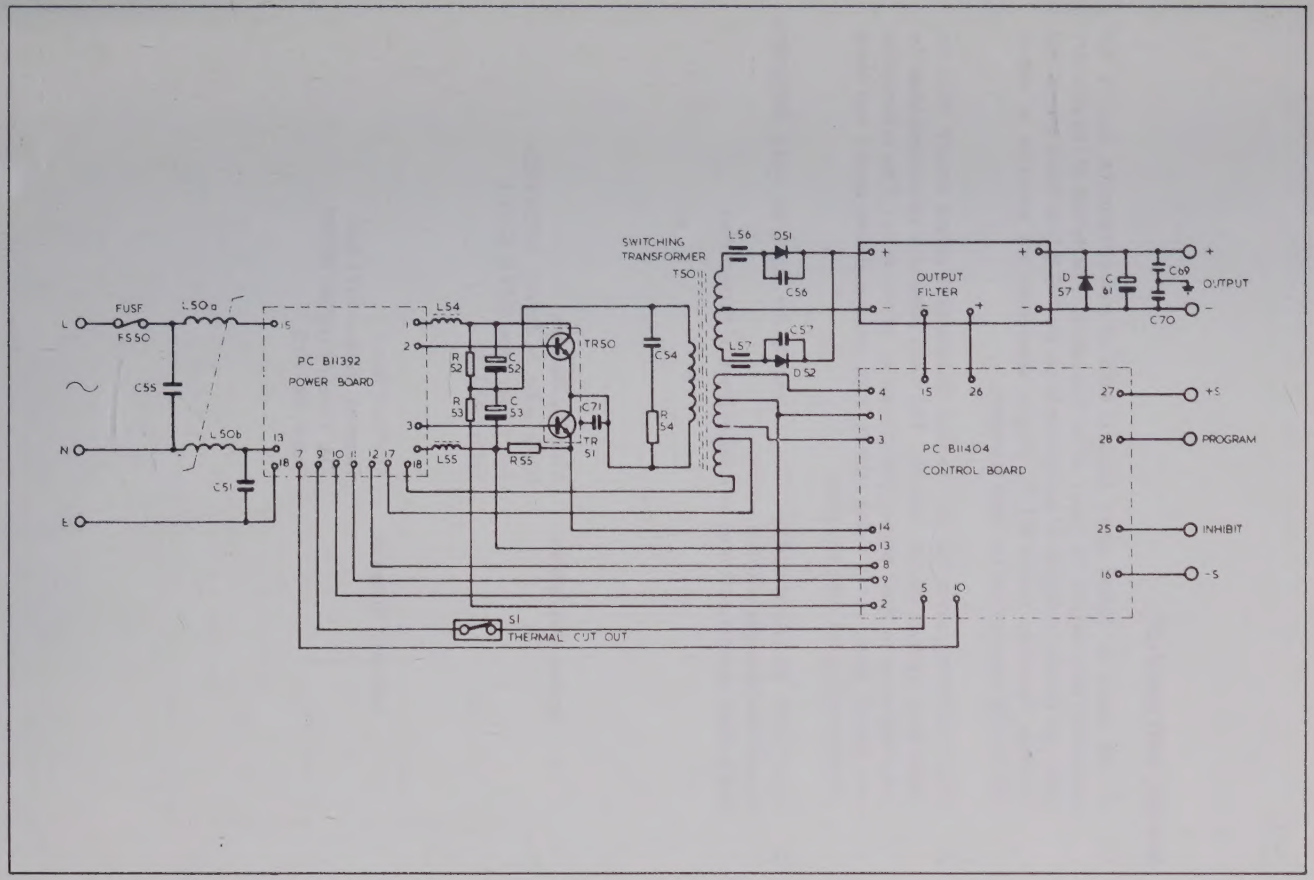
The output is sensed and compared with reference; the resultant signal is fed via an Optical Coupler to control the mark space of the inverter.

Overvoltage protection is provided by absorbing any short term overvoltage with a transient suppressor on the output and by shutting the unit down for longer term overvoltage.

CIRCUIT DESCRIPTION



CIRCUIT DIAGRAM



SPARES AND SERVICE

1. A full stock of tested spare parts is held at our Ilfracombe factory for customers who require to repair units themselves. The nature of the circuitry does not permit changing of components on the P.C.B.'s without special test facilities, however whole P.C.B. plug-in assemblies are available as spares. See circuit description for part numbers.

2. When returning units to our Service Department please ensure they are adequately packed for the journey. The units must also be accompanied by information as to their origin, and the nature of the defect. This information will greatly assist us in giving speedy turn around, please supply too much information rather than too little.

3. COUTANT ELECTRONICS LTD., reserve the right to make design and component changes without notice.
Equivalent components may be used in place of those listed.

Service and Spares: Kingsley Avenue,
Ilfracombe, N. Devon. EX34 8ES.
Tel: Ilfracombe (0271) 63781.
Telex: 46310.

Sales and Progress: Trafford Road,
Reading, Berks. RG1 8JR.
Tel: Reading (0734) 55391
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